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EXAMINER

SEMENENKO, YURIY

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2841

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/590,371	Applicant(s) GRADL ET AL.	
	Examiner YURIY SEMENENKO	Art Unit 2841	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 August 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 14-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 14-27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 August 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>08/23/2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. Preliminary Amendment filed on 08/23/2006 has been entered. Claims 1-13 have been cancelled. Claims 14--27 are newly added. Claims 14-27 are now pending in the application.

Specification

- 2.1. The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

Arrangement of the Specification

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

- (a) TITLE OF THE INVENTION.
- (b) CROSS-REFERENCE TO RELATED APPLICATIONS.
- I STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
- (d) THE NAMES OF THE PARTIES TO A JOINT RESEARCH AGREEMENT.
- (e) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC.
- (f) BACKGROUND OF THE INVENTION.
 - (1) Field of the Invention.
 - (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
- (g) BRIEF SUMMARY OF THE INVENTION.
- (h) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
- (i) DETAILED DESCRIPTION OF THE INVENTION.
- (j) CLAIM OR CLAIMS (commencing on a separate sheet).
- (k) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
- (l) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a

nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

2.2. **Content of Specification**

- (a) Title of the Invention: See 37 CFR 1.72(a) and MPEP § 606. The title of the invention should be placed at the top of the first page of the specification unless the title is provided in an application data sheet. The title of the invention should be brief but technically accurate and descriptive, preferably from two to seven words may not contain more than 500 characters.
- (b) Cross-References to Related Applications: See 37 CFR 1.78 and MPEP § 201.11.
- (c) Statement Regarding Federally Sponsored Research and Development: See MPEP § 310.
- (d) The Names Of The Parties To A Joint Research Agreement: See 37 CFR 1.71(g).
- (e) Incorporation-By-Reference Of Material Submitted On a Compact Disc: The specification is required to include an incorporation-by-reference of electronic documents that are to become part of the permanent United States Patent and Trademark Office records in the file of a patent application. See 37 CFR 1.52(e) and MPEP § 608.05. Computer program listings (37 CFR 1.96(c)), "Sequence Listings" (37 CFR 1.821(c)), and tables having more than 50 pages of text were permitted as electronic documents on compact discs beginning on September 8, 2000.
- (f) Background of the Invention: See MPEP § 608.01(c). The specification should set forth the Background of the Invention in two parts:
 - (1) Field of the Invention: A statement of the field of art to which the invention pertains. This statement may include a paraphrasing of the applicable U.S. patent classification definitions of the subject matter of the claimed invention. This item may also be titled "Technical Field."
 - (2) Description of the Related Art including information disclosed under 37 CFR 1.97 and 37 CFR 1.98: A description of the related art known to the applicant and including, if applicable, references to specific related art and problems involved in the prior art which are

solved by the applicant's invention. This item may also be titled "Background Art."

- (g) Brief Summary of the Invention: See MPEP § 608.01(d). A brief summary or general statement of the invention as set forth in 37 CFR 1.73. The summary is separate and distinct from the abstract and is directed toward the invention rather than the disclosure as a whole. The summary may point out the advantages of the invention or how it solves problems previously existent in the prior art (and preferably indicated in the Background of the Invention). In chemical cases it should point out in general terms the utility of the invention. If possible, the nature and gist of the invention or the inventive concept should be set forth. Objects of the invention should be treated briefly and only to the extent that they contribute to an understanding of the invention.
- (h) Brief Description of the Several Views of the Drawing(s): See MPEP § 608.01(f). A reference to and brief description of the drawing(s) as set forth in 37 CFR 1.74.
- (i) Detailed Description of the Invention: See MPEP § 608.01(g). A description of the preferred embodiment(s) of the invention as required in 37 CFR 1.71. The description should be as short and specific as is necessary to describe the invention adequately and accurately. Where elements or groups of elements, compounds, and processes, which are conventional and generally widely known in the field of the invention described and their exact nature or type is not necessary for an understanding and use of the invention by a person skilled in the art, they should not be described in detail. However, where particularly complicated subject matter is involved or where the elements, compounds, or processes may not be commonly or widely known in the field, the specification should refer to another patent or readily available publication which adequately describes the subject matter.
- (j) Claim or Claims: See 37 CFR 1.75 and MPEP § 608.01(m). The claim or claims must commence on separate sheet or electronic page (37 CFR 1.52(b)(3)). Where a claim sets forth a plurality of elements or steps, each element or step of the claim should be separated by a line indentation. There may be plural indentations to further segregate subcombinations or related steps. See 37 CFR 1.75 and MPEP § 608.01(i)-(p).
- (k) Abstract of the Disclosure: See MPEP § 608.01(f). A brief narrative of the disclosure as a whole in a single paragraph of 150 words or less commencing on a separate sheet following the claims. In an international application which has entered the national stage (37 CFR 1.491(b)), the applicant need not submit an abstract commencing on a separate sheet if

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an abstract was published with the international application under PCT Article 21. The abstract that appears on the cover page of the pamphlet published by the International Bureau (IB) of the World Intellectual Property Organization (WIPO) is the abstract that will be used by the USPTO. See MPEP § 1893.03(e).

- (l) Sequence Listing. See 37 CFR 1.821-1.825 and MPEP §§ 2421-2431. The requirement for a sequence listing applies to all sequences disclosed in a given application, whether the sequences are claimed or not. See MPEP § 2421.02.

2.3. The disclosure is objected to because of the following informalities:

page 3, line 5: "DE 198164445 A1" should be change to - DE 19816445 A1-.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 14-15 and 24 are rejected under 35 U.S.C. 102(b) as being anticipated by Perino et al. (US 6545875) hereinafter Perino.

Regarding to Claim 14: Perino discloses in figs. 2-8 an electronic module, comprising: at least one circuit carrier 20 having a first side, a second side opposite said first side, and an electroconductive material 25 coating both said first and second sides (col. 4:15-24); a first group of electronic components 23d, 23e, 23f (for forming a user interface – intended use) applied and connected onto said first side (top) of said circuit carrier 20; and a second group of electronic components 23a, 23b, 23c for forming a computing

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and control module (col. 5:14-25) applied and connected onto said second side of said circuit carrier.

The sole difference between the claim and reference is the intended use. However, a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. See *In re Casey*, 370 F.2d 576, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 312 F.2d 937, 939, 136 USPQ 458, 459 (CCPA 1963). Since the claim does not express or imply a structural difference, they are not seen to be patentably distinct.

Regarding to Claim 15: Perino discloses the electronic module having all of the claimed features as discussed above with respect to claim 14, wherein said circuit carrier 20, figs. 2-8 is free from through-connection points, including silver through hole through-connection points.

Regarding to Claim 24: Perino discloses in figs. 2-8 a method for producing an electronic module, which comprises the steps of: providing a circuit carrier 20; loading a first side of the circuit carrier 20 with a first group of electronic components 23d, 23e, 23f (for forming a user interface – intended use) of the electronic module; loading a second side of the circuit carrier with a second group of electronic components 23a, 23b, 23c for forming a computing and control module (col. 5:14-25); and setting up signal transmission and/or power supply connections between the first side and the second side (col. 4:21-25).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4.1. Claims 16-18 and 25-26 are rejected under 35U.S.C. 103(a) as being unpatentable over Perino as applied to claims 14-15 and 24 above, and further in view of in view of Kroesen (DE 19816445) hereinafter Kroesen.

Regarding to Claim 16: Perino discloses the electronic module having all of the claimed features as discussed above with respect to claim 14, wherein said circuit carrier 20, figs. 2-8 provide for two-way transmission of control signals between said first group of electronic components on said first side of said circuit carrier and said second group of electronic components on said second side of said circuit carrier and/or for supplying said first side with electrical power via said second side or conversely (col. 5:14-25), except Perino doesn't explicitly teach at least one signal transmission device for two-way transmission of control signals.

Kroesen teaches in figs 2-4 at least one signal transmission device^{12, 13} for two-way transmission of control signals.

Therefore it would have been obvious to one of ordinary skill in the art, at the

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time the invention was made for Perino to include in his invention at least one signal transmission device for two-way transmission of control signals, as taught by Kroesen because Kroesen teaches that such a bilateral configuration decreases size of the electronic board and provides possibility to break section of the circuit board (Abstract).

Regarding to Claim 17: Perino as modified by the teaching of Kroesen discloses the electronic module having all of the claimed features as discussed above with respect to claim 14, wherein: said circuit carrier 20, figs. 2-4 has an edge region and plug-in regions 21, 22, on both said first and second sides,

except Perino doesn't explicitly teach said signal transmission device has at least one plug-in element plugging into said edge region of said circuit carrier via opposite said plug-in regions formed on said first and said second side of said circuit carrier and conjugate with one another.

Kroesen teaches in figs 2-4 said circuit carrier 1 has an edge region 10 and plug-in regions 9 on both said first and second sides; said signal transmission device 12, 13 has at least one plug-in element plugging into said edge region 10 of said circuit carrier 1 via opposite said plug-in regions 9 formed on said first and said second side of said circuit carrier 1 and conjugate with one another.

Therefore it would have been obvious to one of ordinary skill in the art, at the time the invention was made for Perino to include in his invention said signal transmission device has at least one plug-in element plugging into said edge region of said circuit carrier via opposite said plug-in regions formed on said first and said second side of said circuit carrier and conjugate with one another, as taught by Kroesen because Kroesen teaches that such a bilateral configuration decreases size of the electronic board and provides possibility to break section of the circuit board (Abstract).

Regarding to Claim 18: Perino as modified by the teaching of Kroesen discloses the electronic module having all of the claimed features as discussed above with respect to claim 16, wherein said first side of said circuit carrier 20, fig. 2-4 has a first contact region 21; said second side of said circuit carrier has a second contact region 22,

except Perino doesn't explicitly teach said signal transmission device has at least one conductor element electrically connecting said first contact region to said second contact region.

Kroesen teaches in figs 2-4 said signal transmission device 12, 13 has at least one conductor element 14 electrically connecting said first contact region to said second contact region.

Therefore it would have been obvious to one of ordinary skill in the art, at the time the invention was made for Perino to include in his invention said signal transmission device has at least one conductor element electrically connecting said first contact region to said second contact, as taught by Kroesen, because Kroesen teaches that such a bilateral configuration decreases size of the electronic board and provides possibility to break section of the circuit board (Abstract).

Regarding to Claim 25: Perino discloses the electronic module having all of the claimed features as discussed above with respect to claim 24, wherein: said circuit carrier 20, figs. 2-4 has an edge region and plug-in regions 21, 22, on both said first and second sides,

except Perino doesn't explicitly teach said signal transmission device has at least one plug-in element plugging into said edge region of said circuit carrier via opposite said plug-in regions formed on said first and said second side of said circuit carrier and conjugate with one another.

Kroesen teaches in figs 2-4 said circuit carrier 1 has an edge region 10 and plug-in regions 9 on both said first and second sides; said signal transmission device 12, 13 has at least one plug-in element plugging into said edge region 10 of said circuit carrier 1 via opposite said plug-in regions 9 formed on said first and said second side of said circuit carrier 1 and conjugate with one another.

Therefore it would have been obvious to one of ordinary skill in the art, at the time the invention was made for Perino to include in his invention said signal transmission device has at least one plug-in element plugging into said edge region of said circuit carrier via opposite said plug-in regions formed on said first and said second

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side of said circuit carrier and conjugate with one another, as taught by Kroesen because Kroesen teaches that such a bilateral configuration decreases size of the electronic board and provides possibility to break section of the circuit board (Abstract).

Regarding to Claim 26: Perino discloses the electronic module having all of the claimed features as discussed above with respect to claim 24, wherein said first side of said circuit carrier 20, fig. 2-4 has a first contact region 21; said second side of said circuit carrier has a second contact region 22,

except Perino doesn't explicitly teach said signal transmission device has at least one conductor element electrically connecting said first contact region to said second contact region.

Kroesen teaches in figs 2-4 said signal transmission device 12, 14 has at least one conductor element 14 electrically connecting said first contact region to said second contact region.

Therefore it would have been obvious to one of ordinary skill in the art, at the time the invention was made for Perino to include in his invention said signal transmission device has at least one conductor element electrically connecting said first contact region to said second contact, as taught by Kroesen, because Kroesen teaches that such a bilateral configuration decreases size of the electronic board and provides possibility to break section of the circuit board (Abstract).

4.2. Claim 19 is rejected under 35U.S.C. 103(a) as being unpatentable over Perino in view of Kroesen as applied to claims 16-18 and 25-26 above, and further in view of Zeng et al., (US 6243272) hereinafter Zeng.

Regarding to Claim 19: Perino as modified by the teaching of Kroesen discloses the electronic module having all of the claimed features as discussed above with respect to claim 16,

except Perino doesn't explicitly teach said circuit carrier has a through-hole formed therein; said first side of said circuit carrier has a first contact region; said

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second side of said circuit carrier has a second contact region; said signal transmission device has at least one through- connection element running through said through-hole in said circuit carrier and electrically connects said first contact region to said second contact region.

Zeng teaches in figs. 2A,B the circuit carrier 200 has a through-hole 207 formed therein; said first side of said circuit carrier 200 has a first contact region (around a through-hole 207,at top); said second side of said circuit carrier has a second contact region (around a through-hole 207, at bottom); said signal transmission device has at least one through- connection element (connector in through-hole 207) running through said through-hole in the circuit carrier 200 and electrically connects said first contact region to said second contact region.

Therefore it would have been obvious to one of ordinary skill in the art, at the time the invention was made for Perino to include in his invention said circuit carrier has a through-hole formed therein; said first side of said circuit carrier has a first contact region; said second side of said circuit carrier has a second contact region; said signal transmission device has at least one through- connection element running through said through-hole in said circuit carrier and electrically connects said first contact region to said second contact region, as taught by Zeng, in order to transmit signal from one side of the circuit carrier to another side.

4.3. Claims 21 and 22 are rejected under 35U.S.C. 103(a) as being unpatentable over Perino in view of Kroesen and Petsch (US 4399486) hereinafter Petsch.

Regarding to Claim 21: Perino discloses the electronic module having all of the claimed features as discussed above with respect to claim 14, wherein: said first side has a first region figs. 11A, B (at top); said second side (at bottom) has a second region 110 and a third region 111, said third region is different from the second region 110; and said second group of electronic components are mounted on said second region (shown in fig. 11),

except Perino doesn't explicitly teach two things:

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1) said first side has a first SMD region; said second side has a second SMD region, said second SMD region is a region corresponding to and opposite to said first SMD region of said first side; said first group of electronic components are mounted on said first SMD region by SMD technology; and

2) said second side has a THD region; and said second group of electronic components are mounted in said THD region by THD technology.

Kroesen teaches in figs 2-4 the first side of circuit carrier 1 has a first SMD region; said second side of circuit carrier 1 has a second SMD region; said second SMD region is a region corresponding to and opposite to said first SMD region of said first side; said first group of electronic components 2, 3, 4, 5 are mounted on said first SMD region by SMD technology (Abstract).

Therefore it would have been obvious to one of ordinary skill in the art, at the time the invention was made for Perino to include in his invention said first side has a first SMD region; said second side has a second SMD region, said second SMD region is a region corresponding to and opposite to said first SMD region of said first side; said first group of electronic components are mounted on said first SMD region by SMD technology, as taught by Kroesen, because Kroesen teaches in order to increase density of the electrical components.

Petsch teaches in fig. 1 one side of the circuit board 1 has region 15 and a THD region 2, the THD region is different from the region 15, and the second group of electronic components 3,4, 5, 6 and 7 are mounted in the THD region 2 by THD technology (col. 2:36-59).

Therefore it would have been obvious to one of ordinary skill in the art, at the time the invention was made for Perino to include in his invention said second side has a THD region; and said second group of electronic components are mounted in said THD region by THD technology, as taught by Petsch, in order to provide space saving design.

Regarding Claim 22: Perino discloses the electronic module having all of the claimed features as discussed above with respect to claim 14, wherein: said first side has a first

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region figs. 11A,B (at top); said second side (at bottom) has a second region 110 and a third region 111, said third region is different from the second region 110; and said second group of electronic components are mounted on said second region (shown in fig. 11),

claim 14, wherein: said first side has a first region 110, 11A,B (at top) and a third region 110 being different from said first region; said second side has a second region, said second region is a region corresponding to and opposite to said first region of said first side; said first group of electronic components are mounted on said first region and also mounted on said third region; and said second group of electronic components are mounted on said second region of said second side (shown in fig. 11),

except Perino doesn't explicitly teach two things:

1) said first side has a first SMD region; said second side has a second SMD region, said second SMD region is a region corresponding to and opposite to said first SMD region of said first side; said first group of electronic components are mounted on said first SMD region by SMD technology; and

2) said first side has a THD region; and said first group of electronic components are mounted in said THD region by THD technology.

Kroesen teaches in figs 2-4 the first side of circuit carrier 1 has a first SMD region; said second side of circuit carrier 1 has a second SMD region; said second SMD region is a region corresponding to and opposite to said first SMD region of said first side; said first group of electronic components 2, 3, 4, 5 are mounted on said first SMD region by SMD technology (Abstract).

Therefore it would have been obvious to one of ordinary skill in the art, at the time the invention was made for Perino to include in his invention said first side has a first SMD region; said second side has a second SMD region, said second SMD region is a region corresponding to and opposite to said first SMD region of said first side; said first group of electronic components are mounted on said first SMD region by SMD technology, as taught by Kroesen, because Kroesen teaches in order to increase density of the electrical components.

Petsch teaches in fig. 1 one side of the circuit board 1 has region 15 and a THD region 2, the THD region is different from the region 15, and the second group of electronic components 3,4, 5, 6 and 7 are mounted in the THD region 2 by THD technology (col. 2:36-59).

Therefore it would have been obvious to one of ordinary skill in the art, at the time the invention was made for Perino to include in his invention said first side has a THD region; and said first group of electronic components are mounted in said THD region by THD technology, as taught by Petsch, in order to provide space saving design.

4.4. Claim 27 is rejected under 35U.S.C. 103(a) as being unpatentable over Perino as applied to claims 14-15 and 24 above, and further in view of Zeng.

Regarding to Claim 27: Perino discloses the method having all of the claimed features as discussed above with respect to claim 24,

except Perino doesn't explicitly teach the setting up step further comprises: forming at least one through hole in the circuit carrier; forming at least one contact region on the first side of the circuit carrier and at least one second contact region on the second side of the circuit carrier; and inserting a through-connection element into the at least one through hole to electrically connect the at least one first contact region to the at least one second contact region.

Zeng teaches in figs. 2A,B the circuit carrier 200 has a through-hole 207 formed therein; said first side of said circuit carrier 200 has a first contact region (around a through-hole 207, at top); said second side of said circuit carrier has a second contact region (around a through-hole 207, at bottom); said signal transmission device has at least one through- connection element (connector in through-hole 207) running through said through-hole in the circuit carrier 200 and electrically connects said first contact region to said second contact region.

Therefore it would have been obvious to one of ordinary skill in the art, at the

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time the invention was made for Perino to include in his invention the setting up step further comprises: forming at least one through hole in the circuit carrier; forming at least one contact region on the first side of the circuit carrier and at least one second contact region on the second side of the circuit carrier; and inserting a through-connection element into the at least one through hole to electrically connect the at least one first contact region to the at least one second contact region, as taught by Zeng, in order to transmit signal from one side of the circuit carrier to another side.

4.5. Claim 20 is rejected under 35U.S.C. 103(a) as being unpatentable over Perino in view of Kroesen and in view of Zeng as applied to claim 19 above, and further in view of Nojioka (US 6333471) hereinafter Nojioka.

Regarding to Claim 20: Perino as modified by the teaching of Kroesen and Zeng discloses the electronic module having all of the claimed features as discussed above with respect to claim 19,

except Perino doesn't explicitly teach said through-connection element is a plug-in element formed of sheet metal, said plug-in element having a spring section, a plane contact surface and a pin region spring- connected to said contact surface by said spring section, said contact surface abuts flush against at least one of said first and second contact regions of said circuit carrier, said pin region runs through said through-hole when said plug-in element is inserted in said through-hole as said through-connection element.

Nojioka teaches in figs. 1-2 the through-connection element is a plug-in element 8 formed of sheet metal (col. 4:51), said plug-in element 8 having a spring section 8a, a plane contact surface 8b and a pin region 8a spring- connected to said contact surface 8b by said spring section, said contact surface abuts flush against at least one of said first 4 and second contact regions of said circuit carrier 1, said pin region 8a runs through said through-hole 6 when said plug-in element is inserted in said through-hole as said through-connection element.

Therefore it would have been obvious to one of ordinary skill in the art, at the

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time the invention was made for Perino to include in his invention said through-connection element is a plug-in element formed of sheet metal, said plug-in element having a spring section, a plane contact surface and a pin region spring- connected to said contact surface by said spring section, said contact surface abuts flush against at least one of said first and second contact regions of said circuit carrier, said pin region runs through said through-hole when said plug-in element is inserted in said through-hole as said through-connection element, as taught by Nojioka, in order to transmit signal from one side of the circuit carrier to another side, as taught by Nojioka (col. 2:47-51).

4.6. Claim 23 is rejected under 35U.S.C. 103(a) as being unpatentable over Perino in view of Kroesen as applied to claims 16-18 and 25-26 above, and further in view of Goodin (US 3185897) hereinafter Goodin.

Regarding to Claim 23: Perino (modified as taught by Kroesen) discloses the electronic module having all of the claimed features as discussed above with respect to claim 18, except Perino doesn't explicitly teach said conductor element is a cable jumper. Goodin in gi. 3 the conductor element is a cable jumper 35.

Therefore it would have been obvious to one of ordinary skill in the art, at the time the invention was made for Perino to include in his invention said conductor element is a cable jumper, as taught by Goodin, in order to provide connection to the various circuit components, as taught by Goodin (col. 1:26-31).

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Johnson et al. – PG Pub. No. 2009/0052122;

Yamashita – PG Pub. No. 2005/0200002.

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6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yuriy Semenenko whose telephone number is (571) 272-6106. The examiner can normally be reached on 8:00am - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dean A. Reichard can be reached on (571)- 272-2800 ext. 31. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Y. S./

Examiner, Art Unit 2841

/Dean A. Reichard/

Supervisory Patent Examiner, Art
Unit 2841